

Post-Visit Report for AGATE FOSSIL BEDS NATIONAL MONUMENT Mammal Inventory Small Terrestrial Mammal Inventory – June 2003

Bat surveys were attempted at Agate Fossil Beds National Monument from 13-15 June 2003. Weather was problematic, with nightly storms and winds continuing after the storms had passed.

Mist Net Effort

Mist nets were set over the main stem of the Niobrara at points south of the housing area and at the bridge along the hiking trail south of the Visitor Center. A long net was also set across the side pond that is north of the main stem, just south of the housing area. Bat detectors were used to determine whether or not bats were active in the area with trees at the western end of the Park. No bat activity was detected in that area, so no nets were set there. The nets along the main stem of the river produced one swallow, and the net over the side pond produced one nighthawk.

Acoustic Surveys

Acoustic surveys were conducted along the main stem of the Niobrara from south of the housing area to the hiking trail bridge south of the Visitor Center, and then up and around the fossil deposit sites, and back. An acoustic survey was also conducted among the trees in the western end of the park and in the immediate vicinity of the Visitor Center. While the latter survey produced no calls, the survey at the eastern end of the park did yield a few passes. These files await analysis and assignation to species where possible.

Other Observations / Collections

A porcupine (*Erethizon dorsatum*) was observed on the hiking trail bridge on the night of 14 June, and along the trail leading from the hiking trail east toward the side pond on the night of 15 June. White-tail deer (*Odocoileus virginianus*) and cottontail rabbits (*Sylvilagus* sp.) were also observed.

Future Work

Another attempt to survey for bats will be needed during the 2004 field season. This attempt is tentatively scheduled for mid- to late-June 2004, depending on weather and night-time temperatures.

Post-Visit Report for DEVILS TOWER NATIONAL MONUMENT Mammal Inventory
Bat Inventory – June 2003

Devils Tower was surveyed for bats on the nights of 17 and 18 June, 2003. A third net session was planned for the night of 19 June, but cancelled due to high winds at the Park.

Mist Net Effort

Five mist nets were set in the drainage below Tar Pot Spring on the night of 17 June. Nets were opened at 9:00pm and closed at 1:00am when the temperature dropped below 50°F (48°F). The first mist net capture of the night was a flying squirrel (*Glaucomys sabrinus*). Three bats were subsequently captured, including one *Myotis evotis* (Western long-eared myotis), and two *Myotis lucifugus* (Little brown bats), before the nets had to be closed due to cool temperatures.

Three nets were set over open water in the drainage paralleling and inside the west section of road leading to the Tower on the night of 18 June, 2003. Two of the nets were set below the last pullout on the right (east) side of the road before the curve to the east, and the third was set approximately 100m south of this along the same drainage. Although the wind was brisk, these nets were protected by their position low in the drainage. Considerable bat activity was visually observed prior to darkness. These nets produced 11 bats, including 1 *Myotis evotis* (Western long-eared myotis), 1 *Myotis lucifugus* (Little brown bat), 8 *Myotis thysanodes* (Fringe-tailed bat), and 1 *Myotis septentrionalis* (Northern long-eared myotis).

Acoustic Surveys

Bat detectors were set proximal to each of the netting areas and left to record activity throughout the netting session. The acoustic files recorded during the netting sessions await further funding for analysis and assignation to species where possible.

Alphabetical List of Mammals Captured/Observed at Devils Tower

Glaucomys sabrinus - Northern flying squirrel
Myotis evotis – Western long-eared myotis
Myotis lucifugus – Little brown bat
Myotis septentrionalis – Northern long-eared myotis
Myotis thysanodes – Fringe-tailed bat

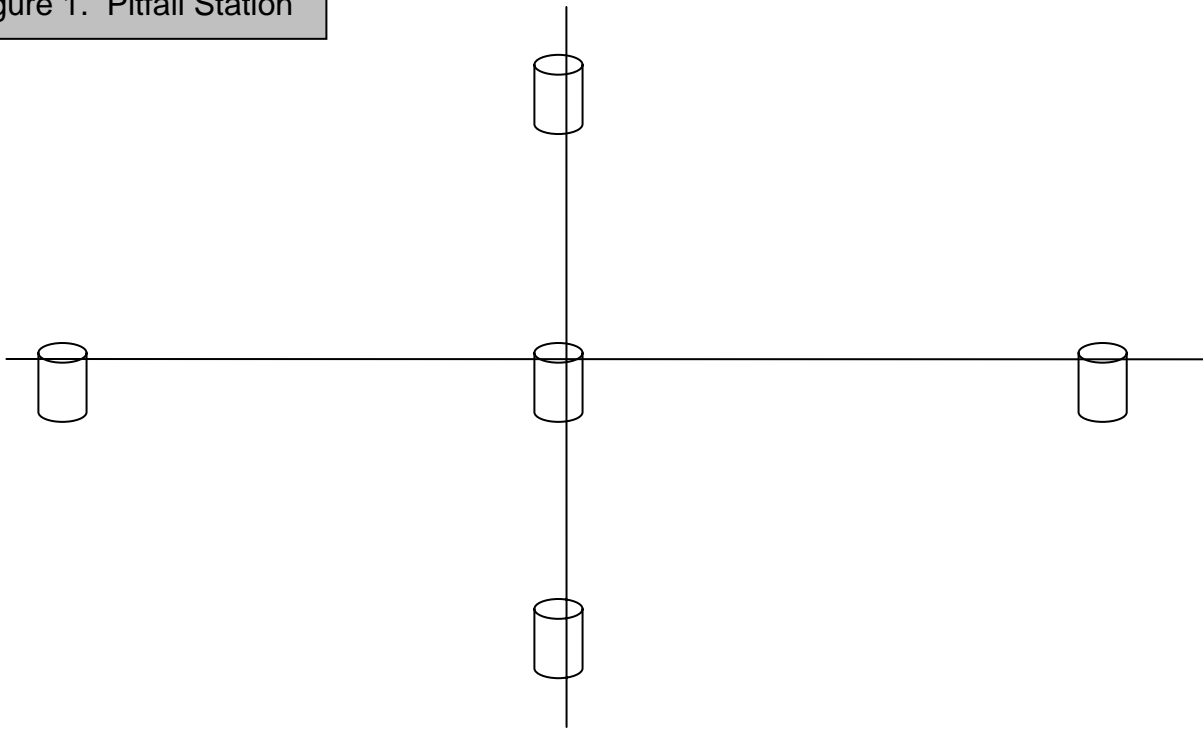
Post-Visit Report for FORT LARAMIE NATIONAL HISTORIC SITE Mammal Inventory
Small Terrestrial Mammal Inventory – July 2003

Fort Laramie NHS was surveyed for small, terrestrial mammals and bats during the period from 15-19 July 2003. Three habitat types were recognized at this Park: riparian forest, grassland, and wetland/riverine. Pitfall stations were set in each of the riparian forest and grassland habitat types, while Sherman live traps were placed in all three habitat types. A total of 1620 Sherman live trap nights and 120 pitfall trap nights were conducted at this Park.

Trapping Effort

Three pitfall stations (Figure 1), each consisting of five 4-gallon buckets and 20m of 10" fencing, were run in each habitat (grassland and riparian forest) for 4 consecutive nights (15-18 July), providing a total of 60 trap nights per habitat for pitfalls.

Figure 1. Pitfall Station



Eight Sherman live trap transects were established, with 200 traps in riparian forest (RIP), 180 traps in grasslands (GRA), and 160 traps in wetlands (WET). Transect locations and descriptions follow:

- RIP-1 (80 traps) – In floodplain west of road, SW of the Fort area (roughly across road from “bat house”). Transect began at Riparian Pitfall Station 1 (UTM Coordinates [13T 0536233 4672109](#)) and proceeded at 210°.
- RIP-2 (40 traps) – In strip of woods running N/S along a small drainage that is south of the south loop road. UTM Coordinates Start: [13T 0536985 4671847](#) and proceeded at 140°.
- RIP-3 (80 traps) – In woods along N side of road paralleling the southern boundary fence (south pasture road). UTM Coordinates Start: [13T 0537250 4671892](#) and proceeded at 30°.

GRA-1 (80 traps) – In sagebrush grassland along N side of south pasture road, just east of Grassland Pitfall 1. UTM Coordinates Start: [13T 0537706 4671989](#) and paralleled road.

GRA-2 (40 traps) were set along the northern segment of the pasture road, toward the east end of the loop, and just up (out of the drainage) from Riparian Pitfall 3. UTM Coordinates Start: [13T 0537926 4672063](#) and paralleled bank of drainage.

GRA-3 (20 traps) – In old horse pasture just south of highway leading to Fort; on old road leading to cottonwood stand. Across old road from Grassland Pitfall 3. UTM Coordinates [13T 0538109 4672825](#).

GRA-4 (40 traps) – In NW corner of Park (area referred to by staff as “restored prairie” N/NW of old hospital), just inside fence. UTM Coordinates Start: [13T 0536182 4673064](#) and proceeded toward hospital.

WET-1 (80 traps) – In western end of south edge of Park, just south of the southern part of the south pasture loop road. These wetlands are reportedly of anthropogenic origin, resulting from seepage from the irrigation canal. UTM Coordinates [13T 0536701 4671826](#).

WET-2 (80 traps) – In second (eastern) drainage seep, south of pasture road. UTM Coordinates [13T 0537103 4671852](#).

Pitfall stations were associated with Sherman trap transects, or located separately, as follows:

<u>Pitfall Station</u>	<u>UTM Coordinates</u>	<u>Sherman Transect or Description</u>
RIP-PF1	13T 0536233 4672109	RIP-1
RIP-PF2	13T 0537625 4671993	On N side of pasture road where it straightens out and heads east.
RIP-PF3	13T 0537884 4672064	In Laramie River drainage N of pasture loop road; GRA-2
GRA-PF1	13T 0537706 4671989	GRA-1
GRA-PF2	13T 0531865 4671948	S of pasture road in SE corner, just before gate
GRA-PF3	13T 0538109 4672825	GRA-3

Trapping Results

A Habitat / Trap Type Summary is provided below:

Riparian Forest Shermans

Microtus ochrogaster - 3

Reithrodontomys megalotis - 5

Grassland Shermans

Microtus ochrogaster— 9

Onychomys leucogaster - 3

Peromyscus maniculatus— 7

Reithrodontomys megalotis— 3

Wetland Shermans

Microtus ochrogaster— 8

Reithrodontomys megalotis— 1

Riparian Forest Pitfalls

Microtus ochrogaster— 4

**Sorex cinereus/haydeni* – 2

**Sorex merriami* - 3

Grassland Pitfalls

* *Shrew* - 1

*Shrews have been sent to the Sternberg Museum for identification; identifications provided here will change based on further examination of the specimens.

Mist Net & Acoustic Bat Surveys

Mist nets were set over a side pool of the Laramie River just down from the bat house. These nets were run for the nights of 16 and 17 July and captured 10 Little brown bats (*Myotis lucifugus*; 8 lactating females, 2 male). Bat detectors were run both nights at this site. The acoustic files recorded during the netting sessions await further funding for analysis and assignation to species where possible.

On the night of 18 July, in preparation for Wyoming Bat Night at the Fort, we set some nets around buildings of the Fort complex to determine good locations for demonstration nets on the night of the 19th. Needless to say, we caught plenty of Little brown bats; we were just trying frantically to get the bats out so we could close the nets! However, we did also catch a lactating *Eptesicus fuscus* (Big brown bat) in a net strung between trees along the parade ground.

On the night of 19 July, we set one net up behind a building where it was easy for people to gather around, and where we thought we would not catch too many bats. We caught several more Little brown bats during the Wyoming Bat Night demonstrations.

Other Observations / Collections

Cottontail rabbits (*Sylvilagus* sp.) were observed at a distance throughout the Park, but identification to species was not possible. A family of raccoons was observed near Riparian Pitfall #3, as was a screech owl. One of the seasonals who was walking his dog on the south pasture road said he had run into a couple of striped skunks (*Mephitis mephitis*). A black-tailed jackrabbit (*Lepus californicus*) was observed by Marquardt along Grassland Transect #4.

Post-Visit Report for FORT UNION TRADING POST NHS Mammal Inventory
Bat Inventory – July 2003

Fort Union National Trading Post National Historic Site was surveyed for bats on the nights of 10-13 July 2003.

Mist Net Effort

The evening of 10 July was used to conduct reconnaissance for potential net sites, and to run the bat detectors because it was too windy to run the mist nets. The wooded area to the west of the Fort was checked for possible netting sites. This area presented no pools of standing water. Although there were no really good net sites, we decided we would try to net this area the first calm night. The area between the Fort and the river were also examined, with even less potential observed. The Fort itself appeared to be an area of activity. All doors were locked, so we could not enter the Fort yard; however, we did place a bat detector at the gap in the south doors. A second detector was left in the woods to the west of the Fort.

On the night of 11 July, we set three mist nets in the woods west of the Fort. Two bats, both Little brown bats (*Myotis lucifugus*) were captured in the woods. We also checked the Fort several times during the netting session to see if we could observe any bats flying. No bats were observed during these walk-bys.

On the night of 12 July, we set three nets near the south access to the Park (south of the river). Few bats were observed flying in this area, and most of what was observed was flying very high. One Little brown bat was captured and light-tagged. However, this bat flew to a nearby cottonwood and was never observed to leave.

On the final night, 13 July, we set four nets inside the Fort walls. One net was set up on the catwalk, and the other 3 were set on the ground in the Fort yard. Two Big brown bats (*Eptesicus fuscus*) were caught right before a severe thunderstorm impacted the area. The bats were identified and released on the leeward side of the Fort as the winds were too strong for them to fly on the west side. The mist nets were struck and we departed the area as the deluge began.

Acoustic Surveys

Bat detectors were run the entire night of 10 July at the south door to the Fort and in the woods west of the Fort. One bat detector was run at each of the net sites on the nights of 11 and 12 July. The acoustic files recorded during these sessions await further funding for analysis and assignation to species where possible.

Alphabetical List of Bats Captured at Fort Union

Eptesicus fuscus – Big brown bat

Myotis lucifugus – Little brown bat

Post-Visit Report for JEWEL CAVE NATIONAL MONUMENT Mammal Inventory
Small Terrestrial Mammal Inventory – May 2003.

Jewel Cave National Monument was surveyed for small, terrestrial mammals during the period from Tuesday, 20 May to Thursday, 22 May 2003. Sherman live trap transects were established in each of the two main habitats (burned and unburned ponderosa pine forest) to provide a total of 1280 trap nights across the site.

Trapping Effort

Six Sherman live trap transects were set at this site:

- West-1 (200 traps) unburned drainage inside south gate and along west side of USFS Road 278, and then crossing the road to run along pine forest ridges (southern Hell Canyon area). UTM Coordinates Start: [13T 0594237 4841469](#)
End: [13T 0594061 4842124](#)
- West-2 (200 traps) up and over ridge to east, just inside south gate and east of USFS Road 278. This line was in a mix of burned and unburned areas.
UTM Coordinates Start: [13T 0594315 4841452](#) End: [13T 0594919 4841664](#)
- North-1 (80 traps) in burned area above (north of) Visitor Center.
UTM Coordinates Start: [13T 0594560 4843183](#) proceeded S/SW.
- North-2 (40 traps) in burned/unburned area above (north of) Visitor Center. Started at NW corner of tank area. UTM Coordinates Start: [13T 0594271 4843005](#) proceeded NW.
- North-3 (40 traps) in burned/unburned area above (north of) Visitor Center. Started near the highline above the Natural Resources house and roughly paralleled the highline to the NW. UTM Coordinate for the start of transect: [13T 0594230 4842908](#).
- East (120 traps) east-west transect close to eastern edge of Park, inside east gate off of USFS Road 278-1C. Transect started just inside gate and proceeded NW (285°) to [13T 0594957 4842108](#).

These transects were run for 2 nights, producing 1280 total live trap nights for the site.

Six medium-size, wire box traps (aka “Hav-A-Hearts” or “Tomahawks”) were set near the East transect, and four were set along the West-1 transect. These were baited with sardines.

Trapping Results

The wire box traps did not produce any captures. All captures were in the Sherman live traps. Results are presented by habitat type (unburned, mixed, burned) below:

Ponderosa Pine – Unburned (West-1 and East Transects)

Prairie Vole (*Microtus ochrogaster*) – 20

Meadow Vole (*Microtus pennsylvanicus*) – 8

White-footed mouse (*Peromyscus leucopus*) — 29

Deer Mouse (*Peromyscus maniculatus*) — 53

Long-tailed Vole (*Microtus longicaudus*) – 1

Least chipmunk (*Tamias minimus*) - 1

Ponderosa Pine – Mixed (West-2, North-2, and North-3)

Red-backed Vole (*Clethrionomys gapperi*) - 1
Prairie Vole (*Microtus ochrogaster*) – 4
Meadow Vole (*Microtus pennsylvanicus*) – 1
White-footed mouse (*Peromyscus leucopus*) — 7
Deer Mouse (*Peromyscus maniculatus*) — 109
Unidentified *Peromyscus* (*Peromyscus* sp.) - 4
Long-tailed Vole (*Microtus longicaudus*) – 2
Unidentified *Microtus* (*Microtus* sp.) - 5
Nuttall's Cottontail Rabbit juvenile (*Sylvilagus nuttali*) - 1
Least chipmunk (*Tamias minimus*) - 6

Ponderosa Pine – Burned (North-1)

White-footed mouse (*Peromyscus leucopus*) — 4
Deer Mouse (*Peromyscus maniculatus*) — 33
Long-tailed Vole (*Microtus longicaudus*) – 2
Red Squirrel (*Tamiasciurus hudsonicus*) - 1

Other Observations / Collections

Both Nuttall's and Eastern cottontails were observed along the transects. Elk were observed just outside the Park fence off of USFS Road 278-C. Mule deer were also observed at the east end of the Park. Mountain lion tracks were observed in a mud puddle just inside the south gate on USFS Road 278. A black-backed woodpecker was observed on the East transect.

Post-Visit Report for KNIFE RIVER INDIAN VILLAGES NHS Mammal Inventory Bat Inventory – July 2003

Knife River Indian Villages National Historic Site was surveyed for bats on the nights of 6, 7, and 9 July 2003. Thunderstorms throughout the evening of 8 July prevented any survey work for bats that night.

Mist Net Effort

On the night of 6 July, four mist nets were set over the road on the northwest corner of the hairpin loop in the northern portion of the woods that are northeast of the maintenance buildings. Large bats, possibly Big brown bats (*Eptesicus fuscus*) or Hoary bats (*Lasiurus cinereus*) were observed flying above or near the tree canopy early in the session, and then dropped below the canopy later in the session. These observations were made a short distance south of where the nets were actually set. There was a distinct pulse of activity from approximately 9:30-10:00pm, after which there was virtually no activity observed or “heard” with the bat detectors. The temperature dropped quickly following sunset and the nets were pulled at 11:30pm due to low temperatures. These nets produced only one bat, a Little brown bat (*Myotis lucifugus*). Deer were active in the area throughout the session and one managed to run through and destroy a net right toward the end of the netting session.

On the night of 7 July, we set up four mist nets around the area just south of the previous net sets. This was the area where high bat activity was observed on the night of the 6th. However, as the peak activity time of 9:30-10:00pm came and went, we observed no bats flying; nor did we hear them with the bat detectors. We captured no bats on this night.

A series of thunderstorms rolled through on the evening of the 8th of July, precluding any bat work. Earlier in the day, we scouted the loop trail at the southern end of the Park for potential net sites. No good net sites were observed.

On the night of 9 July, we set up 5 nets (2 singles, and 1 triple zig-zag) over puddles in the road, and over the road where the trees formed a closed canopy, right at the entrance to the same patch of woods (over the road going to the archaeological site west of the woods, and in the open area containing the interpretive display). Two bats, a Hoary bat (*Lasiurus cinereus*) and a Little brown bat (*Myotis lucifugus*), were captured at this site; both were lactating females.

Acoustic Surveys

Bat detectors were set at each mist net site and run for the duration of each netting session. The acoustic files recorded during these netting sessions await further funding for analysis and assignation to species where possible.

Alphabetical List of Bats Captured at Knife River

Lasiurus cinereus – Hoary bat

Myotis lucifugus – Little brown bat

Post-Visit Report for SCOTTS BLUFF NATIONAL MONUMENT Mammal Inventory Small Terrestrial Mammals and Bats Inventory – June 2003

Scotts Bluff National Monument was surveyed for small, terrestrial mammals and bats 9-13 June, 2003. Live traps (large, wire box traps) were set in the irrigation canal paralleling the north side of Gering Canal Road, and in drainages in the badlands area south of the same road. Mist nets were set across Gering Canal and over ephemeral pools on the Saddle Rock Trail. Acoustic surveys were conducted along Gering Canal Road and along the Saddle Rock Trail and at the Visitor Center.

Live Trap Effort

Six live traps were set, three in and along Gering Canal, and three in the badlands topography south of the Gering Canal Road. These traps were set and baited on 10 June, and checked daily and rebaited as needed until they were pulled on 13 June. The three traps along Gering Canal all captured magpies. The traps in the badlands produced no captures.

Mist Net Effort

The bat survey work in general was hampered by weather and the water stage in the Gering Canal. Upon arrival, the canal was running strong, with no quiet, isolated pools over which to net. This timing was unfortunate, but we had no way of knowing that water was being released through the canal until we arrived on site. Mist nets, in order to be effective at capturing bats, need to be set over isolated sources of water. Setting nets along a full-running body of water such as the canal or a river, is generally not very productive. The water level issue was compounded by stormy weather with strong winds being a nightly factor. As such, mist nets were set only over isolated, ephemeral pools of water along the lower portion of Saddle Rock Trail. No bats were captured in mist nets.

Acoustic Surveys

Acoustic surveys along Gering Canal did indicate that bats were active in the area. Most calls were travel or search calls; few feeding buzzes were heard. Acoustic surveys along Saddle Rock Trail, in combination with visual observations, indicated high, but ephemeral, foraging activity of bats along the north face of Saddle Rock. Spotlight-assisted observations of the foraging bats suggest that they were probably *Myotis evotis* (Western Long-eared Myotis). The topography of the area in which the bats were observed to forage does not lend itself to setting up nets. A bat detector was also set up to monitor activity in the area of the theatre at the Visitor Center. The acoustic files recorded during the various surveys await further funding for analysis and assignation to species where possible.

Other Observations / Collections

As mentioned above, bats (probably Western long-eared myotis) were visually observed around the top of Saddle Rock. Other mammals observed during this visit were:

Mule deer	<i>Odocoileus hemionus</i>	In spring area along lower reaches of Saddle Rock Trail
Bushy-tailed woodrat	<i>Neotoma cinerea</i>	In tunnel along Summit Road

Future Work

Another attempt to survey for bats will be needed during the 2004 field season. This attempt is tentatively scheduled for mid- to late-June 2004, depending on weather and night-time temperatures.